In the Claims

Amendments to the Claims:

1. (currently amended) A method of forming a substantially planar surface of an optical waveguide device, comprising the steps:

forming at least one waveguide core portion within at least one cladding portion; the waveguide core portion having an upper surface; the cladding portion having a higher portion over at least the waveguide core portion and a lower portion;

forming a patterned sacrificial portion over the lower cladding portion and a portion of the higher cladding portion, leaving a second portion of the higher cladding portion exposed;

removing at least a portion of the exposed second portion of the higher cladding ~~exposed~~ portion by a selective removal process selective to the patterned sacrificial portion leaving a remnant of the exposed second portion of the higher cladding ~~exposed~~ portion;

planarizing:

the remnant of the exposed second portion of the higher cladding ~~exposed~~ portion over the waveguide core portion; and

the lower cladding portion;

to form a planarized ~~a predetermined thickness over the upper surface of the waveguide core portion and the upper surface of the~~ cladding portion coplanar with the ~~smooth~~ upper surface of the waveguide core portion;

to form the substantially planar surface of an optical waveguide device.

2. (currently amended) The method of claim 1, wherein the ~~predetermined~~ planarized cladding portion has a thickness ~~is~~ of between about 0 and 200 nm above the upper surface of the waveguide core portion.

3. (original) The method of claim 1, wherein the cladding portion has a first index of refraction; the waveguide core portion has a second index of refraction; and the waveguide core portion second index of refraction is greater than the cladding portion first index of refraction.

4. (original) The method of claim 1, wherein the planarization is a chemical mechanical polishing process.

5. (original) The method of claim 1, wherein the waveguide core portion comprises at least one waveguide core embedding within at least another waveguide core.

6. (original) The method of claim 1, wherein the patterned sacrificial portion is comprised of:

photoresist: or

photoresist stacked upon a film comprised of: silicon nitride, silicon oxynitride organic silicate glass, diamond like carbon, silicon dioxide, polyimide, PMMA, tantalum, tungsten or molybdenum.

7. (original) The method of claim 1, wherein the cladding portion is comprised of silicon nitride, organic silicate glass, silicon dioxide, polyimide or PMMA.

8. (original) The method of claim 1, wherein the selective removal process selective to the patterned sacrificial portion is a dry and/or wet etching process.

9. (original) The method of claim 1, wherein the patterned sacrificial portion is removed before the planarization.

10. (original) The method of claim 1, wherein the sacrificial portion is photoresist and the patterned sacrificial photoresist portion is removed before the planarization by a stripping process.

11. (original) The method of claim 1, wherein the waveguide core portion is formed using a first mask; and the patterned sacrificial portion is patterned from a sacrificial layer using a second mask that is the reverse of the first mask.

12. (currently amended) The method of claim 1, wherein the planarization also removes ~~the~~ any remaining patterned sacrificial portion ~~protruding remnant~~.

13. (original) The method of claim 1, wherein waveguide core portion is formed using a first mask; and not all the sacrificial portion area is needed to be patterned using a second mask that is the reverse of the first mask.

14. (original) The method of claim 1, wherein the patterned sacrificial portion is also removed during the planarization.

15. (original) The method of claim 1, wherein the planarization includes a fine planarization process.

16. (currently amended) The method of claim 1, wherein the planarization of the remnant of the exposed second portion of the higher cladding ~~exposed~~ portion over the waveguide core portion and the lower cladding portion does not expose the upper surface of the waveguide core portion.

Claims 17 to 57 (canceled)

58. (new) A method of forming a substantially planar surface of an optical waveguide device, comprising the steps of:

forming at least one waveguide core portion within at least one cladding portion; the waveguide core portion having an upper surface; the cladding portion having a higher portion over at least the waveguide core portion and a lower portion; and

planarizing at least the higher portion of the cladding portion to form a planarized cladding portion coplanar with the upper surface of the waveguide core portion;

wherein the waveguide core portion comprises at least one waveguide core embedding within at least another waveguide core.

59. (new) The method of claim 58, further comprising the steps of:

forming a patterned sacrificial portion over the lower cladding portion and a portion of the higher cladding portion, leaving a second portion of the higher cladding portion exposed; and

removing at least a portion of the exposed second portion of the higher cladding portion by a selective removal process selective to the patterned sacrificial portion leaving a remnant of the exposed second portion of the higher cladding portion.

60. (new) The method of claim 59, whereby the planarization also planarizes

the remnant of the exposed second portion of the higher cladding portion over the waveguide core portion; and

the lower cladding portion.

61. (new) The method of claim 58, wherein the planarized cladding portion has a thickness of between about 0 and 200 nm above the upper surface of the waveguide core portion.

62. (new) The method of claim 58, wherein the cladding portion has a first index of refraction; the waveguide core portion has a second index of refraction; and the waveguide core portion second index of refraction is greater than the cladding portion first index of refraction.

63. (new) The method of claim 58, wherein the planarization is a chemical mechanical polishing process.

64. (new) The method of claim 59, wherein the sacrificial portion is comprised of:

photoresist: or

photoresist stacked upon a film comprised of: silicon nitride, silicon oxynitride organic silicate glass, diamond like carbon, silicon dioxide, polyimide, PMMA, tantalum, tungsten or molybdenum.

65. (new) The method of claim 58, wherein the cladding portion is comprised of silicon nitride, organic silicate glass, silicon dioxide, polyimide or PMMA.

66. (new) The method of claim 59, wherein the selective removal process selective to the patterned sacrificial portion is a dry and/or wet etching process.

67. (new) The method of claim 59, wherein the patterned sacrificial portion is removed before the planarization.

68. (new) The method of claim 60, wherein the sacrificial portion is photoresist and the patterned sacrificial photoresist portion is removed before the planarization by a stripping process.

69. (new) The method of claim 59, wherein the waveguide core portion is formed using a first mask; and the patterned sacrificial portion is patterned from a sacrificial layer using a second mask that is the reverse of the first mask.

70. (new) The method of claim 60, wherein the planarization also removes any remaining patterned sacrificial portion.

71. (new) The method of claim 60, wherein waveguide core portion is formed using a first mask; and not all the sacrificial portion area is needed to be patterned using a second mask that is the reverse of the first mask.

72. (new) The method of claim 60, wherein the patterned sacrificial portion is also removed during the planarization.

73. (new) The method of claim 58, wherein the planarization includes a fine planarization process.

74. (new) The method of claim 59, wherein the planarization of the remnant of the exposed second portion of the higher cladding portion over the waveguide core portion and the lower cladding portion does not expose the upper surface of the waveguide core portion.